

CLAIMS

1. A telecommunications network, comprising:
a plurality of network ports,
a communications path connecting two network ports, and
an automatic link identifier configured to transmit a port identification message from each of the connected ports to the other connected port through the communications path.
2. The network of claim 1 wherein the automatic link identifier is configured for the port identification messages from each of the ports to converge on an agreed upon identification for each said port.
3. The network of claim 1 further comprising a controller that is responsive to network port modifications by initiating the transmission of the port identification messages.
4. The network of claim 1 wherein the communications path is an optical communications path.
5. The network of claim 4 further comprising at least one network element that includes one of said ports and said port is a SONET port.
6. The network of claim 4 further comprising at least one network element that includes one of said ports and said port is a SDH port.
7. The network of claim 3 wherein the controller is configured to identify a link within the network by determining the identities of the two ports connected by a communications path to form a network link.

8. The network of claim 7 wherein the controller is configured to develop a network map by accumulating the link identities of a plurality of links within the network.
9. The network of claim 8 further comprising an alarm processing system responsive to network alarms by re-routing communications through the network, said alarm processing system also responsive to the common identification of each port within the network.
10. The network of claim 8 further comprising a provisioning system configured to allocate telecommunications bandwidth in accordance with said network mapping.
11. In a telecommunications network including a plurality of ports connected through communication paths, each combination of communications path and connected network ports forming a network link, a method of determining a unique identity pairing ports within a link, comprising the steps of:
- (A) transmitting a port identification message from a first port at one end of a network communications path to a second port connected at the opposite end of the communications path, said port identification message including information regarding the first port's perception of the network link,
 - (B) receiving a second port identification message from the second port, said second port identification message including information regarding the second port's perception of the network link,
 - (C) comparing the two ports' perceptions of the network link.
12. The method of claim 11 wherein step (A) comprises the step of:
- (A1) forming a logical data link connection between neighboring ports.
13. The method of claim 11 wherein step (A) comprises the step of:
- (A2) transmitting port identity information over the logical data link connection.

14. The method of claim 11 wherein step (A) comprises the step of:
(A3) employing LAPD protocol for transmitting port identity information.
15. The method of claim 11 further comprising the step of:
(D) storing the two ports' perception of the network link if the comparison of step C reveals that the two ports perceptions of the network link is the same.
16. The method of claim 15 further comprising the step of:
the first port updating its perception of the link to agree with the perception received from the second port.
17. The method of claim 16 further comprising the step of:
(F) returning to step (A).
18. In a telecommunications network including a plurality of ports connected through communication paths, each combination of communications path and connected network ports forming a network link, a method of creating a telecommunications network map comprising the steps of:
(G) determining a unique identity for each port within a link using the following steps:
(H) transmitting a port identification message from a first port at one end of a network communications path to a second port connected at the opposite end of the communications path, said port identification message including information regarding the first port's perception of the network link,
(I) receiving a second port identification message from the second port, said second port identification message including information regarding the second port's perception of the network link,
(J) comparing the two ports' perceptions of the network link,

(K) associating each of the ports within the network whose unique identities have been determined in steps (G) through (H) with the network element in which it resides, and

(L) accumulating the link identity information to form a network interconnectivity map.

19. The method of claim 18 further comprising the step of:

(M) provisioning telecommunications paths between network elements according to the network map formed in step (L).

20. The method of claim 19 further comprising the step of:

(N) adjusting telecommunications bandwidth flow through the network in response to the activation of a network system alarm.

21. The method of claim 12 wherein the logical data link connection is a LAPD AITS service.

22. The method of claim 11 wherein the path is an optical telecommunications path.

23. The method of claim 11 wherein the transmitting port is a SONET port.

24. The method of claim 11 wherein the transmitting port is a SDH port.

25. The method of claim 18 wherein the network is a bidirectional line switched ring and an initiating network element transmits identification messages from its east and west ports.

26. The method of claim 25 wherein each network element in the ring other than the initiating network element:

receives an identification message at a first, east or west port;

appends its own identification information to the identification message; and

passes the updated message from its opposite, west or east port.

27. The method of claim 26 wherein the initiating network element:
accumulates the network information received from both its east and west ports; and
forms a network map based upon that accumulated information.

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